

NAVAL HEALTH RESEARCH CENTER

COMPUTER ASSISTED MEDICAL DIAGNOSIS (CAMD)

SYSTEM VERSION 1.0

USER'S GUIDE

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DTIC QUALITY INSPECTED 4

19961004 066

Report No. 92-21

Approved for public release: distribution unlimited.



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NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND
BETHESDA, MARYLAND

Computer Assisted Medical Diagnosis (CAMD) System Version 1.0 Users' Guide

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Report No. TR 92-21 was supported by the Naval Medical Research and Development Command, Bethesda, MD, Department of the Navy, under Work Unit No. 63706N M0095.005-6103. The views expressed in this article are those of the authors and do not reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U.S. Government.

SUMMARY

The CAMD system is designed to assist corpsmen in rendering a medical diagnosis. The CAMD system was written in FoxPro Version 2.0, a database management system. The signs, symptoms, and laboratory information collected by the Abdominal and Chest modules can be gathered on the standard forms developed for CAMD, or entered directly (real time) into the system. The Chronological Record of Medical Care (SF600) can then be generated to document an encounter. Additionally, information from the disease and treatment files can be added to the SF600.

The CAMD system User's Guide was written to introduce the Independent Duty Corpsmen to this software system, explaining the Keyboard and Mouse commands necessary to run the various options, and displaying the screens associated with them.

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Section 1 Introduction

1.1 Purpose of the Computer Assisted Medical Diagnosis (CAMD) System Users' Guide. The objective of the users' guide is to provide personnel, who may be unfamiliar with personal computer software, the information necessary to effectively use the CAMD system. Additionally, this guide will supply the users with a detailed description, as well as, the basic structure and features of the CAMD system.

1.2 Computer Assisted Medical Diagnosis (CAMD). Medical care on board many small ships and submarines is rendered by specially trained independent duty corpsmen. These vessels often operate in remote areas where these corpsmen cannot easily obtain consultations. Therefore, the Navy Medical Research and Development Command (NMRDC) initiated a program to develop a set of diagnostic algorithms that could be automated. The objectives of this effort are:

- a) Provide medical practitioners with accurate medical diagnostic and treatment information.
- b) Prevent unnecessary, hazardous, and disruptive medical evacuations by providing diagnostic assistance to independent duty corpsmen.
- c) Improve communications between isolated independent duty corpsmen and their supporting medical officers by providing a standardized method for information collection.
- d) Gather clinical information in a modifiable diagnostic knowledge base to ensure diagnostic accuracy.

1.3 References. The following references provide technical and background information for CAMD.

FoxPro Commands & Functions, Fox Software, Inc., Perrysburg, Ohio, 1991.

ICD- 9 CM, International Classification of Diseases 9th Revision, U.S. Dept. of Health and Human Services, 1980.

Abdominal Pain - A Decision Support System for the Management of Acute Abdominal Pain Version 3.0 - Programmer's Manual, Naval Submarine Medical Research Laboratory Technical Report NSMRL 1148, Groton, CN, 1989.

1.4 Terms and Abbreviations.

Carriage Return <CR>. Notation used to denote a carriage return typically executed by pressing the "ENTER" or "RETURN" key on a computer keyboard. If a mouse is available on the computer system, "click" or press the top left button for a return.

Database Management (DBM). A management approach to database design consisting of what information is collected, where information stored, and how it is processed by computer software.

Default. A response assumed by CAMD. If the default value is correct, the user need only press the "ENTER" or "RETURN" key.

Expert System. A computer program which emulates the behavior of a human expert in a specific area of knowledge.

FoxPro. A database management development system written by the Fox Software, Inc. FoxPro Version 2.0 was used to develop the CAMD system.

SAMS. SNAP Automated Medical System Version 7.0 is a FoxPro software application for handling shipboard medical department forms, files and data.

SNAPS. Shipboard Non-tactical ADP Program.

System. The combination of hardware, firmware, and software designed to function as an integrated unit.

SF600. The Chronological Record of Medical Care standardized form used for documenting a medical encounter.

Section 2 System Summary

2.1 System Application. On U.S. Navy submarines and small surface ships medical services are provided by independent duty corpsmen. To assist the corpsman and enhance their diagnostic skills, the U.S. Navy has initiated the development of CAMD system.

2.2 Programming Language. The CAMD software was written in the FoxPro Version 2.0 programming language. FoxPro is a database management software system created for the personal computer to produce computer applications.

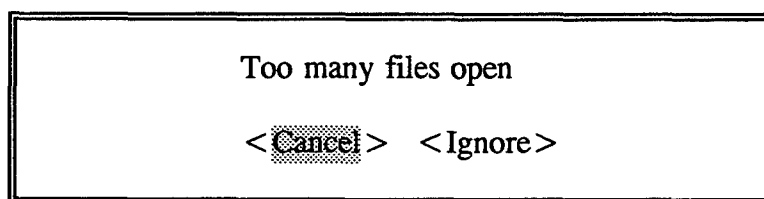
2.3 Security/Privacy. The security module will maintain user passwords which allow log-on access to the program and database files. Menu options are assigned to the user through a security key system in FoxPro. CAMD collects and stores data covered under the 1974 Privacy Act.

2.4 Flexibility. Since CAMD was created by using the FoxPro utilities, enhancements and updates to the system can be accomplished with minimal programming. CAMD was design to compatible with SAMS.

2.5 Maintenance. The primary maintenance functions consist of security options, file and format definitions, user file updates, knowledge base editing, and initialization of data.

2.6 Error Messages. When installing the system the two major error messages that may occur are "Too many files open" and "Out of Environment Space."

2.6.1 Too Many Files Open Error Message. If the "Too many files open" message occurs, the following window will open. Select the <Cancel> button to end the program. Return to the root directory (cd c:\) and modify the CONFIG.SYS by adding or editing the FILES command to minimum 50. Example: FILES = 75. If the system does not have an editor then see EDLIN command in the MS-DOS manual.



2.6.2 Out of Environment Space Error Message. If an "Out of Environment Space" occurs, change the CONFIG.SYS file. Return to the root directory (cd C:\) and modify the CONFIG.SYS by adding the SHELL command.

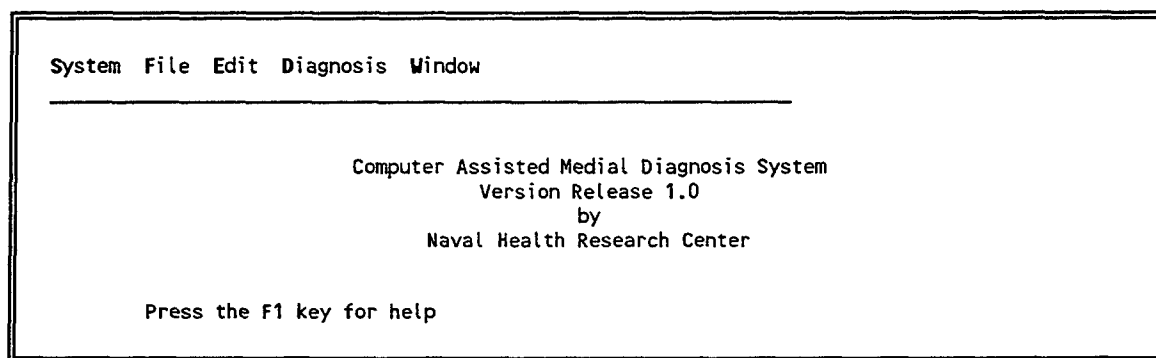
The Shell command should appear as follows:

SHELL=COMMAND.COM /P /E:512 (DOS Version 3.2 and above)

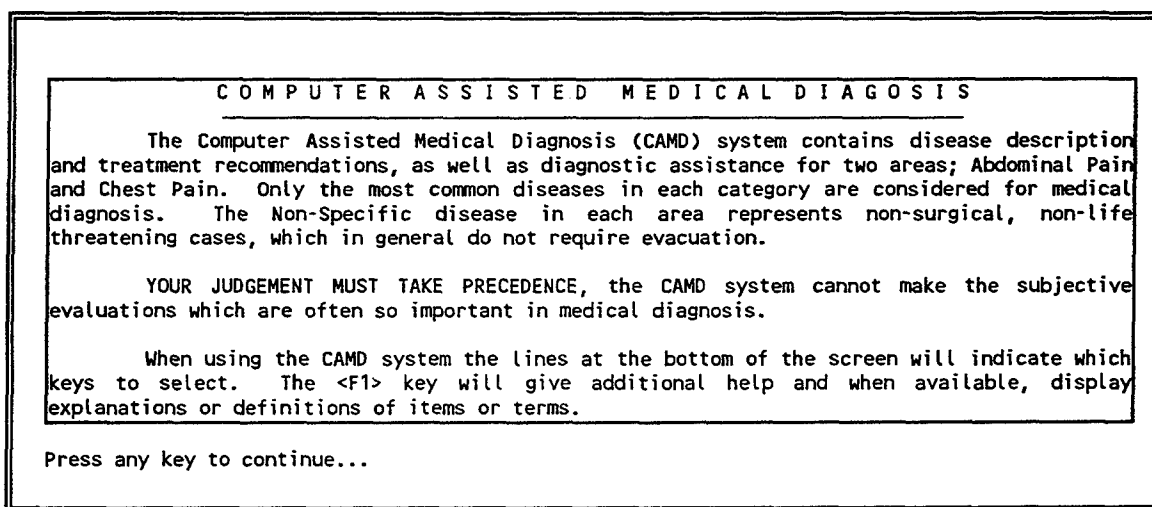
SHELL=COMMAND.COM /P /E:32 (DOS Version 3.1 and below)

The "/P" will make it permanent and the "E/:(size)" will expand the environment space from the default of 160 bytes. Reboot the system after changing the CONFIG.SYS.

2.7 System Organization. The system has five main menus which are (1) System, (2) File, (3) Edit, (4) Diagnosis, and (5) Window. Accessing the system requires a password, see Section 3. Once the password is successfully entered, the following screens will appear:



CAMD main menu



CAMD brief greeting screen

2.8 System Menu Options. The following figure shows all options of the CAMD system. The system is operated using either a mouse or the keyboard to select the menu options described in Section 3.

System	File	Edit	Diagnosis	Window
Help... F1	Reindex Quit	Undo Redo	Register Patient Encounter SF600 Report	Cycle Color...
Change Password Backup Restore		Cut Copy Paste Clear	Disease/Treatment Lookup	
Calculator Calendar/Diary		Select All	Encounter Training Mode	
		Goto Line...		

CAMD System Menu Options

Section 3 Accessing the System

3.1 Entering CAMD (log-on). Change the current directory to CAMD or the one in which CAMD was installed on the system (C:\CAMD). At the MS-DOS prompt, type CAMD and the following security prompt will be displayed.

Unauthorized access to this United States Government Computer System and/or software is prohibited by title 18, United States code, section 1030. This system may only be used for unclassified official business.

Enter Password: -

CAMD System Log-On Screen

Type in the password and <CR>. After an acceptable password has been entered a brief greeting will be shown.

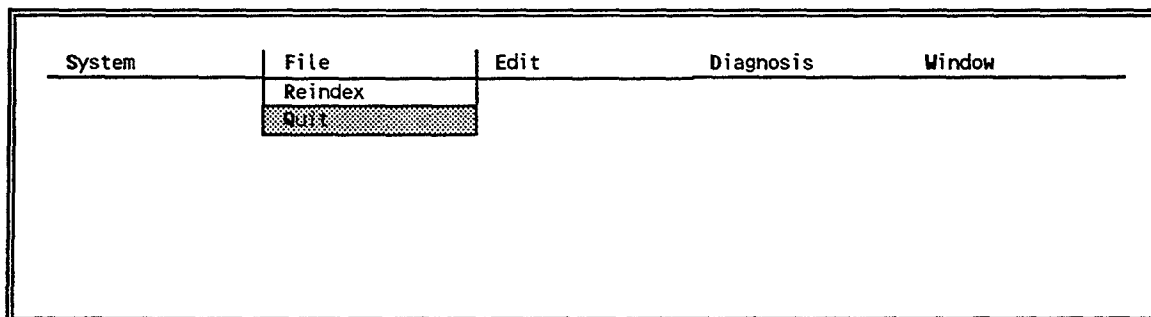
(C) Naval Health Research Center, San Diego, Ca.

#####

If problems occur please contact:
Ms. D. M. Pearsall (Dee)
Naval Health Research Center
P.O. Box 85122
San Diego, Ca. 92186-85122
DSN 553-8401 or Com (619) 553-8401

#####

3.2 Exiting the CAMD (Log-off). Choose *Quit* from the *File Menu* options to exit the CAMD system. If any windows are left open, the system will ask if the user wants them closed. Select the <Yes> option.



3.3 Mouse Techniques

Point - Position the pointer at the specific location on the screen. When moving the mouse, the pointer moves in a similar manner.

Click - Point to an object then press and release the mouse button once.

Double click - Point to an object then press and release the mouse button twice in rapid succession.

Drag - Hold the mouse button down, roll the mouse until the pointer is in the desired location and release the mouse button.

3.4 Choosing A Menu

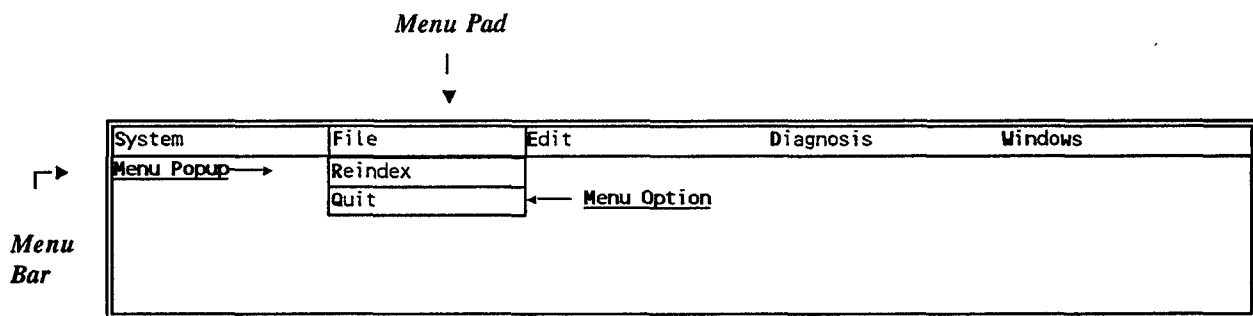
Keyboard:

1. Press the **Alt** key to select the first menu pad, then press the **Right** or **Left** Arrow keys to select other menu pads on the menu bar. Or Press the **Alt** key in conjunction with the highlighted letter of the menu pad.
2. Press <CR> to display the menu popup window.

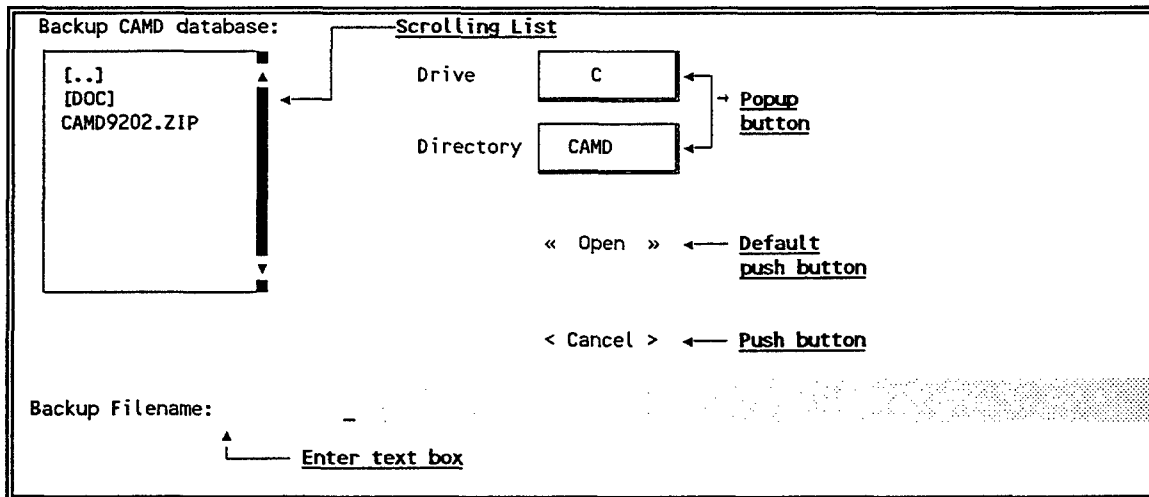
3. Press the **Up** or **Down** Arrow keys to select an option then press **<CR>** to choose the option or enter the highlighted letter of the option and press **<CR>**.

Mouse:

1. Point to the menu pad and press the left mouse button to display the menu popup window.
2. Point to the desired option and press the left mouse button.



3.5 Dialogs. Dialogs are special boxes for the data entry that allow the user to choose the action about to take place.



Scrolling a list

Keyboard:

1. TAB to the list.
2. Press the Down Arrow key or UP Arrow Key

Mouse:

1. Click on the up or down arrow on the scroll bar.
2. Holding down the mouse button will cause the scrolling to continue until released.

Choosing an Option on a Popup

Keyboard:

1. Tab to the popup control, then press <CR> to display the popup.
2. Press the Up or Down Arrow keys to select the option then press <CR>.

Mouse:

1. Point to the popup control and press the mouse button to display the popup.
2. Drag to the desired option, then release the mouse button.

Choosing a Check Box, Radio Button, or Push Button

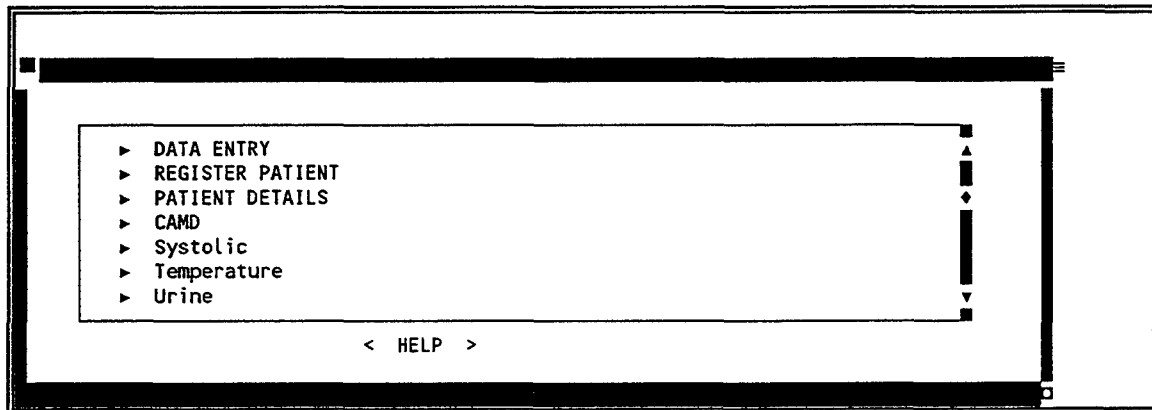
Keyboard:

1. TAB to the check box, radio button, or push button.
2. Press <CR>.

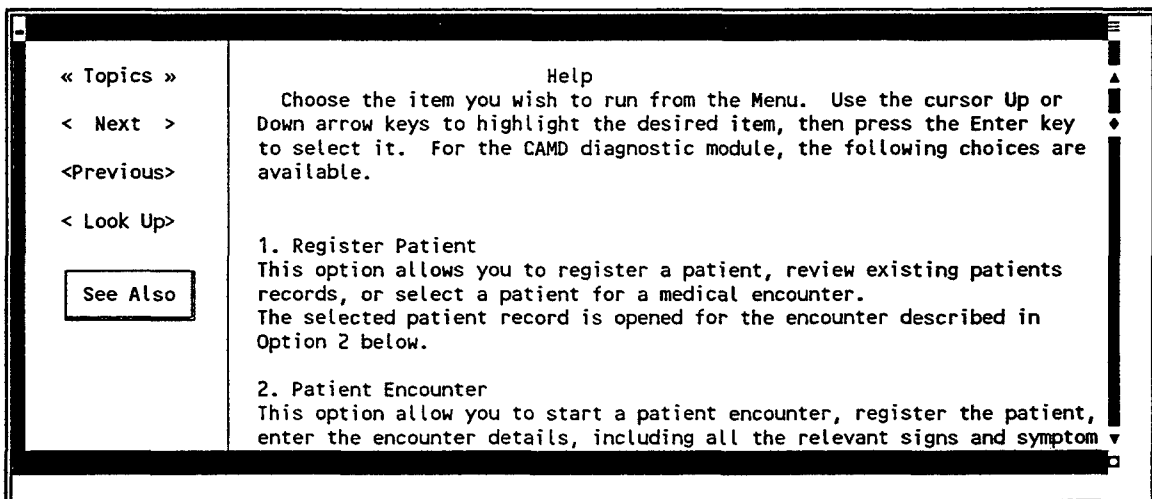
Mouse:

1. Point to the check box, radio button, or push button.
2. Press the button (click).

3.6 On-Line Help (F1). With the CAMD system, help is always close at hand with the F1 key. CAMD provides context sensitive help that can be accessed by pressing F1 or selecting the *Help* option on the *System Menu*. Questions concerning windows or dialogs can be answered by pressing the <F1> key.



CAMD Help Topics Level Window



CAMD Help Detail Level

To see help details for a topic, select the <<Topic>> and press <CR> or double-click on the topic the window or Spacebar. For more information on a topic, use the scroll bar.

To return to the topics level of the Help window and select another topic, choose <Topics>. To see information about the next topic, choose <Next>. To see information about the previous topic, choose <Previous>. The <Look Up> and **See Also** functions are not used by the CAMD system.

To close the HELP window using the keyboard press the escape key <ESC>. To close using the mouse point to the small white rectangle in the top left corner of the window and click.

3.7 Text editing. A text editor allows the user to type and modify information displayed in a region of the screen (e.g., Treatment or SF600 Report). When text editing, use the cursor to move through the text. The cursor looks like a flashing underscore, when in the insert mode, and a flashing box when in the overwrite mode. Press the <Insert> key to switch between modes. It is easy to move the cursor through text using eight basic keys. Four of these keys can also be used in combination with a modifier key <Ctrl> to move the cursor a greater distance. See Appendix B for The Table of Text Editor Commands.

Section 4 System Transactions. To access the top level menu options using the mouse, point to the option and click. To use the keyboard press down the <ALT> key and the first letter of the option. Example: < ALT > D to reach the **D**iagnosis Menu.

System	File	Edit	Diagnosis	Window
--------	------	------	-----------	--------

4.1 System menu. *System Menu* options are used for file maintenance and desk accessories.

System	File	Edit	Diagnosis	Window
Help...F1				
Change Password				
Backup				
Restore				
Calculator				
Calendar/Diary				

4.1.1 Help <F1>. The Help option displays the *Help Window* described in Section 3.6.

4.1.2 Change Password. This options let the users change the password. When *Change Password* is chosen from the *System Menu*, type a new password and press <CR>. Remember this change is permanent, so memorize the new password or make a notation and place it somewhere safe.

Enter Password:	<input type="password"/>
-----------------	--------------------------

4.1.3 Backup. *Backup* is used to copy the database to another file. In the example the file was named CAMD9203. The 9203 represents the year and month in which the files were backed-up. To backup the files select the disk drive and directory where the file is to be stored, enter a name for the backup file, and select <<Open>>. The system will automatically begin this process and display a message when finished.

The screenshot shows a dialog box titled "Backup CAMD database:". On the left is a file list with entries: "[..]", "[DOC]", and "CAMD9202.BCK". To the right of the list are two input fields: "Drive" with the value "C" and "Directory" with the value "CAMD". Below these fields are two buttons: "<< Open >>" and "< Cancel >". At the bottom left, there is a label "Backup Filename:" followed by the text "CAMD9203.BCK".

4.1.4 Restore. This option allows the user to restore or reinstall the database previously backed up by the CAMD system. To restore a backup file enter the disk drive and directory where the backup file was stored, enter the name of the file, and select <<Open>>. The system will automatically begin this process and display a message when finished.

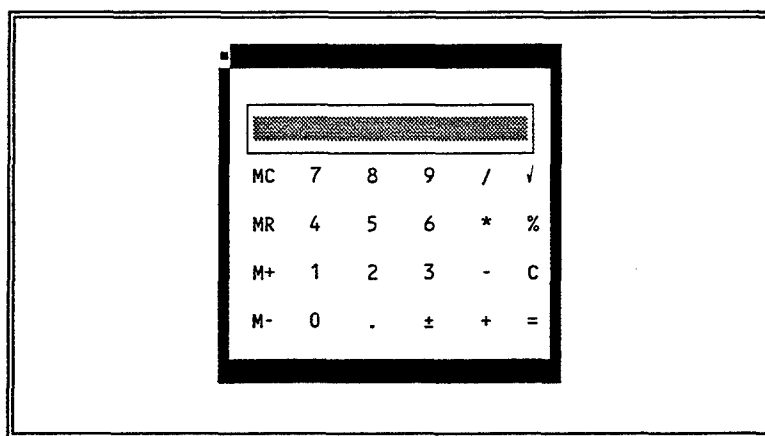
The screenshot shows a dialog box titled "Restore CAMD database:". On the left is a file list with entries: "[..]", "[DOC]", "CAMD9202.BCK", and "CAMD9203.BCK". To the right of the list are two input fields: "Drive" with the value "C" and "Directory" with the value "CAMD". Below these fields are two buttons: "<< Open >>" and "< Cancel >". At the bottom left, there is a label "Restore Filename:" followed by the text "CAMD9203.BCK".

4.1.5 Calculator. When the user chooses the *Calculator* option from the *System Menu* popup a graphic of a calculator appears on the screen. This Calculator used like a standard pocket calculator. Calculations can be performed either using the keyboard or the mouse.

To perform the calculation with the mouse, simply click on the appropriate numbers and symbols on the calculator.

With the keyboard, type the equation as it would be written. Most Calculator keys have the same keyboard equivalents, with the following exceptions:

Q	✓
R	MR
N	±
A	M+
Z	MC
S	M-



Calculator

4.1.6 Calendar/Diary. When the user chooses the *Calendar/Diary* option from the *System Menu* popup, a monthly calendar appears with the current day selected. This calendar is used just like any other calendar to check dates and keep track of appointments. The first time the this option is used the current day is select as a default. If the user wants a different day, the Calendar Window must first be closed, and then reopened. The default then becomes the last day selected. To close this menu option, press the <ESC> key or click the close box option.

System	File	Edit	Diagnosis	Window	Diary
--------	------	------	-----------	--------	-------

August 92						
Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

< ← M > < M → > < ← Y > < Y → > <Today>

To the right of the Calendar panel is the Diary panel. Use the Diary panel to input text associated with any date on the calendar panel. To activate the Diary panel, press the TAB key or choose *Diary* from *Diary Menu* Popup. To activate the Calendar panel, press shift+Tab or choose *Calendar* from the *Diary Menu* popup. Refer to Appendix C for more information.

4.2 File Menu. The *File Menu* contains options for manipulating data files. Currently there are only two options on this menu *Reindex* and *Quit*.

System	File	Edit	Diagnosis	Window
	Reindex			
	Quit			

4.2.1 Reindex. This option is used to reindex or sort the database files. When the user chooses the *Reindex* option from *File Menu* popup, a brief message will be displayed. The window will disappear when the task is completed.

4.2.2 Quit. The *Quit* option ends current CAMD session. When chosen, a message will be shown on the screen, and will return to the MS-DOS prompt (C:\CAMD).

4.3 Edit Menu. The *Edit Menu* options are used when editing the Treatment Section of the Encounter, and SF600.

System	File	Edit	Diagnosis
		Undo	
		Redo	
		Cut	
		Copy	
		Paste	
		Clear	
		Select All	
		Goto Line...	

4.3.1 Undo. Reverses the last action that was performed while text editing. Selecting the *Undo* option repeatedly will reverse all entries made during the current editing session.

4.3.2 Redo. This is the opposite of *Undo*. Choose *Redo* to restore the text to its previous condition. Selecting this option will reverse the *Undo* option.

4.3.3 Cut. Removes selected text from any field, record, or text editing field.

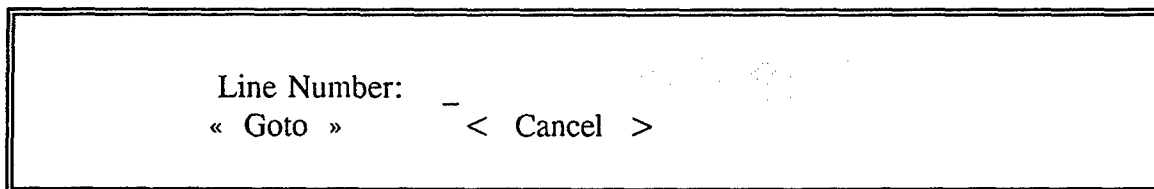
4.3.4 Copy. Duplicates the selected text (without removing it) and places the copy on the clipboard.

4.3.5 Paste. Inserts a copy of the clipboard contents into the current file, field, text editing window at the cursor location. It will replace the contents of the clipboard with the selected text.

4.3.6 Clear. Clear permanently removes selected text or data without placing it on the clipboard. If the user chooses this option when text is selected, the result is the same as pressing the < Delete > or < Backspace > keys. Additionally, the *Clear* option is used to erase a window or the desktop.

4.3.7 Select All. All lines of text in the current editing window are selected.

4.3.8 Goto Line.... Displays the Goto Line dialog to move the cursor to a designated line in a text window.



Line Number: 100

« Goto » < Cancel >

In the Line Number text box, type the number of the line the cursor is to appear. When this option is chosen, the cursor moves to the beginning of the specified line, and the text of that line is displayed in the window. If the line number specified is greater than the number of lines in the window, the cursor is positioned on the last line.

4.4 Diagnosis. Currently, CAMD has two medical areas; Abdominal Pain and Chest Pain. Each area has its own medical diagnosis, disease, and treatment databases. The diagnosis data is group by disease categories, where only the most common diseases are considered. The *Diagnosis Menu* is the main menu for the CAMD system. Use the <Tab> <CR> keys to select options on the keyboard. Below are the five major functions:

System	File	Edit	Diagnosis	Window
			Register Patient	
			Encounter	
			SF600 Report	
			Disease/Treatment Lookup	
			Encounter Training Mode	

4.4.1 Register Patient. This option allows the user to select, edit, search the SAMS data files, register a patient, and review existing patient records.

System	File	Edit	Diagnosis	Window
			Register Patient..	
			Encounter..	
			SF600 Report	
			Disease/Treatment Lookup	
			Encounter Training Mode	

PATIENT SELECTION	
Social Security:	- -
Last Name:	_____
First Name:	_____
« OK » < BROWSE > < CANCEL >	

This window allows the user to 1) Browse the entire database looking for a patient, 2) enter partial information about the patient, 3) select a patient from a candidate list, 4) add a new patient, or 5) cancel the selection process.

4.4.1.1 Browse. To lookup up a patient with <Browse> using the keyboard press the <Tab> key until the cursor is located on top of the button, then press <CR>.

PATIENT SELECTION		
Social Security:	-	-
Last Name:	_____	
First Name:	_____	
« OK » < BROWSE > < CANCEL >		

To select a patient move the cursor to the correct patient (arrow keys on the keyboard). If the information is 1) correct choose the <Select> button on the window, 2) incorrect select the <Edit> button, and 3) not found press the <Cancel> button.

PATIENT FILE	
[000002222]	ANYBODY, ALMOST
[111111111]	DOE, JOHN
[222222222]	ARNOLD, ROSANNE
[333333333]	ZEE, ZORRO
< Select > < Edit > < Cancel >	

4.4.1.2 OK. This option allows the user to enter partial numbers or names for look-up purposes. Enter information to distinguish one patient from another. The "?" can be used as a wild card character.

PATIENT SELECTION		
Social Security:	-	- 2222
Last Name:	_____	
First Name:	_____	
« OK » < BROWSE > < CANCEL >		

With the above entry the last four digits of a social security number could yield the following example:

Select from the following candidates:

[000002222] ANYBODY, ALMOST

[222222222] ARNOLD, ROSANNE

<Select> <Edit> <New> <Search> <Cancel>

Here the user has several options:

- 1) Place the cursor on the patient in the list and press <Select> ,
- 2) Place the cursor on the patient and <Edit> the patient information,
- 3) Add a new patient, if the person was not found, <New> ,
- 4) <Search> through the SAMS database for the person,
- 5) <Cancel> and abort the process.

4.4.1.3 Patient Enter/Edit. This option is called from the previous window when the user selects <New> , <Edit> , <Search> , or the patient cannot be found. After the data is entered the user either selects <OK> to save the record or <CANCEL> to abort the process.

Patient Enter/Edit

Social Security: 000 - 00 - 2222

Last Name: Anyone

First Name: Almost

Middle Initial: A

Date of Birth: 07/13/65

Sex: M

Rate/Rank: HM1

« **OK** » < CANCEL >

4.4.1.4 CANCEL. To cancel the *Register Patient* option, select the <CANCEL> option and the menu window will close.

4.4.2 Encounter.. When the *Encounter* option is selected from the *Diagnosis Menu*, the patient seek function will be executed (see Section 4.4.1 above). If there is a pending encounter on the current patient, the system will prompt to <Resume> the current encounter, create a <New> encounter for the same complaint, or to <Cancel> this session.

System File Edit Diagnosis Window

Pending Encounters

Patient 123456789
 Date 09/28/92

10:02:32 Acute abdominal pain

<Resume> < New > <Cancel>

Press the F1 key for help

After a selection has been made the following screen will appear:

System File Edit Diagnosis Window

Patient Encounter

Date 09/28/92
Time 10:02
Status P
Provider
1

Patient Name DOE
First JOHN

SSN 123-45-6789
Sex M Age 45

<Complaint>

<Symptom>

AGE

<Assist>

<Treatment>

< OK > <Cancel>

<Print > <<Save>> <Cancel>

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 Afford protection in accordance with SECNAVINST 5211.5C

For a new encounter, the first button to be selected is <Complaint>. When the complaint button is activated the following window will pop-up:

```

System  File  Edit  Diagnosis  Window
----- Patient Encounter -----
Date 09/28/92  Time 10:02  Status P      Provider      1
Patient Name DOE                               First JOHN
SSN 123-45-6789                               Sex M        Age 45

<Complaint >                                <Diagnosis>
|-----|-----|-----|-----|-----|-----|
| AGE | | Acute abdominal pain | | <Select> | |
|     | | Acute chest pain   | | <Cancel>  | |
|-----|-----|-----|-----|-----|-----|

```

Once the complaint has been entered, the symptom information can be added. Notice that the first information in the symptom window is age. If this was a pending encounter, the some of the symptom information may have already been entered.

```

System  File  Edit  Diagnosis  Window
----- Patient Encounter -----
Date 09/28/92  Time 10:02  Status P      Provider      1
Patient Name DOE                               First JOHN
SSN 123-45-6789                               Sex M        Age 45

<Complaint > Acute Abdominal Pain
|-----|-----|-----|-----|-----|-----|
| <Symptom> | | <Assist> | |
| AGE | | | | | |
|---|---|---|---|---|---|
|-----|-----|-----|-----|-----|-----|
| <Treatment > |
| < OK > | | <Cancel> | | | |
|---|---|---|---|---|---|
| <Print > | | <<Save>> | | <Cancel> |
|-----|-----|-----|-----|-----|-----|

```

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Select the <Symptom> button to continue entering information. When this button is selected the question window will open. After answering the question, either select <OK> to accept the answer or <Cancel>. Cancel will stop the question and answer session.

System File Edit Diagnosis Window

Patient Encounter

Date 09/28/92 Time 10:02 Status P Provider 1

Patient N
SSN 123-4

<Complain

AGE

Which of the following best describes the site of the pain at ONSET

<input type="checkbox"/> RIGHT UPPER QUAD	<input type="checkbox"/> LEFT HELP
<input type="checkbox"/> LEFT UPPER QUAD	<input type="checkbox"/> CENTRAL
<input type="checkbox"/> RIGHT LOWER QUAD	<input type="checkbox"/> GENERAL
<input type="checkbox"/> LEFT LOWER QUAD	<input type="checkbox"/> RIGHT FLANK
<input type="checkbox"/> UPPER HALF	<input type="checkbox"/> LEFT FLANK
<input type="checkbox"/> LOWER HALF	<input type="checkbox"/> NO PAIN AT ONSET
<input type="checkbox"/> RIGHT HALF	

< OK > <Cancel>

When all of the questions are answered, the <Diagnosis> button should be selected. This button allows the user several options <Select> the marked diagnosis, <View> a description of the marked diagnosis, or <Cancel>. this button can be used when adding treatment information into the encounter form using the *Edit Menu*.

System File Edit Diagnosis Window

Patient Encounter

Date 09/28/92 Time 10:02 Status P Provider 1

Patient Name DOE First JOHN

SSN 123-45-6789

<Complaint >

<Sym

AGE

Diseases on File

APPENDICITIS

NON SPECIFIC ABDOMINAL PAIN

RENAL COLIC

PERFORATED DUODENAL ULCER

CHOLECYSTITIS

SMALL BOWEL OBSTRUCTION

PEPTIC ULCER DISEASE

MESENTERIC ADENITIS

DIVERTICULITIS

<Select> < View > <Cancel>

Once the diagnosis is entered, select the < Assist > button for the computer to compute a diagnosis. When this button is selected a calculating sign will appear.

System File Edit Diagnosis Window

Patient Encounter 1

Date 09/28/92 Time 10:02 Status P Provider
 Patient Name DOE First JOHN
 SSN 123-45-6789 Sex M Age 45

<Complaint > Acute abdominal pain <Diagnosis> APPENDICITIS

One moment

Calculating...

AGE
 SITE AT ONSET
 SITE AT PRESE
 NAUSEA
 APPETITE

AL PAIN

<Treatment >

<Print > <<Save>> <Cancel>

The most likely diagnosis will appear first in the window, and any others will follow beneath. The next step would be to enter <Treatment>, <Print> the encounter, <<Save>> it to file, or <Cancel> to exit. The treatment field is a word processing field and is edited using the *Edit Menu*.

System File Edit Diagnosis Window

Patient Encounter 1

Date 09/28/92 Time 10:02 Status P Provider
 Patient Name DOE First JOHN
 SSN 123-45-6789 Sex M Age 45

<Complaint > Acute abdominal pain <Diagnosis> APPENDICITIS

<Symptom>

AGE 45
 SITE AT ONSET RIGHT LOWER Q
 SITE AT PRESENT RIGHT LOWER Q
 NAUSEA Y
 APPETITE DECREASED

<Assist>

APPENDICITIS
 NON SPECIFIC ABDOMINAL PAIN

<Treatment >

<Print > <<Save>> <Cancel>

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To print the patient encounter select the <Print> button on the Patient Encounter form. The user has an option of printing the information to a file or printer.

Print Encounter Report Function:

Save an encounter to another file

- 1) Select (x) File
- 2) Type in a name after Filename:
- 3) Select <OK>

Print an encounter:

- 1) Select (x) Printer
- 2) Select <OK> (make sure the printer is turned on before choosing <OK>).

System File Edit Diagnosis Window

Patient Encounter

Date 09/28/92 Time 10:02 Status P Provider 1
Patient Name DOE First JOHN
SSN 123-45-6789 Sex M Age 45

<Complaint> Acute S

AGE
SITE AT ONSET
SITE AT PRESEN
NAUSEA
APPETITE

Print Encounter to: (x) File
() Printer

Filename: REPORT.TXT

< OK > <Cancel>

ITIS
st>—▼▲
NAL PAIN▲▼

<Print> <<Save>> <Cancel>

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Afford protection in accordance with SECNAVINST 5211.5C

4.4.3 Disease/Treatment Lookup. This option allows the user to lookup the disease description and treatment protocol. The Disease/Treatment description contains seven sections: Disease Description, Discussion, Differential Diagnosis, Treatment of Disease, Usual Course with Treatment, Complications and Their Management, and Complications and Their Management.

When the *Disease/Treatment Lookup* option is selected from the *Diagnosis Menu* the following pop-up list of descriptions or treatment information will appear.

DISEASE/TREATMENT REFERENCES

ACUTE PANCREATITIS
ANGINA
APPENDICITIS
CHEST INFECTION
CHOLECYSTITIS
DIVERTICULITIS
GASTRITIS
GASTROENTERITIS
HEPATITIS
INGUINAL HERNIA
MESENTERIC ADENITIS
MYOCARDIAL INFARCTION
NON-SPECIFIC ABDOMINAL PAIN

< Select > < View > < Quit >

Disease/Treatment References

To end this process select < Quit > or view any particular Disease or Treatment description simply selected the disease on the scrolling window, then select the < View > push button (see Section 3.5).

The following window of disease descriptions will appear. Select <OK> when finished.

Disease Description
Appendicitis (APPEND) Acute appendicitis Acute appendicitis results from a bacterial invasion of the appendix with inflammation. Incidence is highest in adolescents and young adults, peaking between ages 15 and 24. Typically the pain is initially poorly localized in the periumbilical region. This pain represents irritation of the lumen of the appendix itself. Gradually the pain shifts to the right lower quadrant, becoming constant and discrete as the inflamed appendix begins to irritate the surrounding peritoneum. Anorexia, fever and diminished bowel sounds are usually noted; nausea, vomiting and diarrhea are variable. Temperature, pulse and respiratory rate may be only slightly elevated unless perforation occurs.
< OK >

4.4.4 SF600 Report. This option extracts the encounter data and compiles it into the SF600 report format. The report can either be sent to a printer or stored in a file. The editor allows this report to be modified. See Appendix B for The Table of Text Editor Commands. When selecting the *SF600 Report* from *Diagnosis Menu* popup, the following window appears:

Encounter to Report	
Social Security:	- -
Lastname:	
Firstname:	
Encounter Date:	/ /
« OK » < BROWSE > < CANCEL >	

This option allows the user to fill in Social Security, Last name, First name or encounter date. If any field is unknown leave it blank. The input process allows partial information to be entered, use '?' as a single unknown character. To look up the existing patient encounter in the system, at least one field must be entered. Select <OK> when done, <Browse> to see the entire patient encounter listing, and <Cancel> to abort the process.

Patient in File

[0000000001] Example One

< Select > < Cancel >

Patient Selection

After the correct patient is selected, the system will search the encounter for a specified date. Select <OK> to continue or <Cancel> to quit.

Patient: 000000001
Date: 9/29/92

000000001 14:44:38 Acute Abdominal Pain

< OK > < CANCEL >

The report editing appears when it is finished the generate report.

Report Editing

This 26 Years old male presents with pain over his whole chest which radiates to the left arm. The pain began about 2 days to a week ago and was gradual in onset. The patient has been in continuous pain. He describes the pain as sharp. Numbness is absent. The pain is moderate in severity and seems to be getting worse since it began. By history, coughing makes the pain worse and Pentaphenabarbitol and Gin seems to make the pain better. The patient reports dyspnea associated only this illness. The patient has no cough. Sputum is absent. Orthopnea is absent. Paroxysmal nocturnal dyspnea is absent. Reflux

< Print > < Save > < Cancel >

The users should read the form carefully and necessary changes. Press <Save> to save the change, <print> to output the report, <Cancel> to quit out the option.

The output device can be either a file or printer. Use arrow key or the mouse to select the device. If choosing a <File>, remember to enter the filename at the filename field. Select <OK> when ready send report to output device, or <Cancel> to stop the output report.

4.4.5 Encounter Training Mode. When this option is selected, information is stored in a temporary files and not into the permanent data base. See Section 4.4.3 for detail.

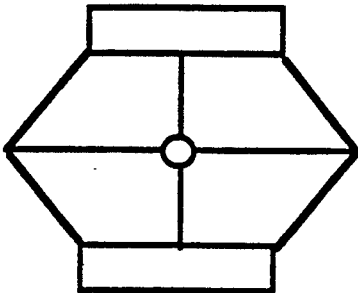
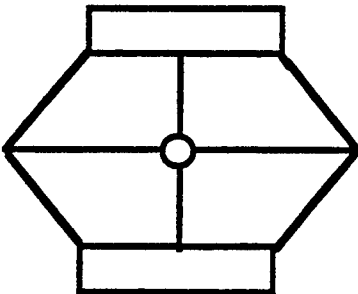
Appendix A: Encounter Forms

ABDOMINAL PAIN DATA SHEET

DATE/TIME:

SSN:

AGE: SEX:

SITE OF PAIN AT ONSET		SITE OF PAIN AT PRESENT		OTHER SYMPTOMS:	
	RUQ LUQ RLQ LLQ Upper Half Lower Half Right Half Left Half Central General Right Flank Left Flank No Pain		RUQ LUQ RLQ LLQ Upper Half Lower Half Right Half Left Half Central General Right Flank Left Flank No Pain	NAUSEA: Yes No	APPETITE: Decreased Normal
				VOMITING: Yes No	JAUINDICE (Hx or yellow skin /sclera) Yes No
				BOWELS: Normal Constipated Diarrhea Blood in Stool Mucus in Stool	URINATION: Normal Frequency Painful Darker Urine Blood in Urine
TYPE OF PAIN : (free of pain at times = intermittent, constant = steady, constant but varying in intensity = colicky) Intermittent Steady Colicky		PROGRESS OF PAIN: (at time of examination) Better Same Worse		PAST HISTORY PREVIOUS INDIGESTION: Yes No PREVIOUS SIMILAR PAIN: Yes No	
SEVERITY OF PAIN: (if in obvious distress = severe, everything else = moderate) Moderate Severe		DURATION OF PAIN: (How long has the pt had the pain?) _____ hours		PREVIOUS SURGERY: (Intraperitoneal abdominal surgery or trauma) Yes No	
AGGRAVATING FACTORS: (have patient move, cough) Movement Cough Food Breathing Other None		RELIEVING FACTORS: Lying Still Vomiting Antacids Food Other None		PREVIOUS ILLNESS: (any illness requiring hospitalization) Yes No TAKING MEDICATIONS: Yes No	

PHYSICAL EXAM

VITAL SIGNS

Temperature: _____ Blood Pressure _____

Pulse Rate _____ Systolic: _____

Respiration _____ Diastolic: _____

SITE OF TENDERNESS
(area of significant pain, palpate most painful last)

RUQ LUQ
RLQ LLQ
Upper Half
Lower Half
Right Half
Left Half
Central
General
Right Flank
Left Flank
No Pain

GENERAL/LAB

MOOD: (obvious distress or physical symptoms = distress, concern about illness = anxious)
Normal Anxious
Distressed

COLOR: (consider temp., check palms & conjunctiva on black or oriental)
Normal Pale
Flushed Cyanotic
Jaundiced

WBC COUNT: _____

ABDOMINAL EXAM

INSPECTION:
(wavelike movement = visible peristalsis, pt. unable to touch hand with belly button = decreased/absent)

Normal Visible Peristalsis
Decreased Abd. Movement

ABDOMINAL SCARS:
Yes No

BOWEL SOUNDS:

(normal unless markedly hyperactive or absent)

Normal Absent Hyperactive

DISTENSION:

(generalized swelling or bloating of entire abdomen)

Yes No

GUARDING:

(voluntary tightening of abd. muscles, pt. can relax with gentle persuasion)

Yes No

MASSSES:

(localized abdominal swelling)

Yes No

RECTAL EXAM

(distinguish between pain and discomfort)

Normal Mass Felt

L.Tender R. Tender

General Tenderness

MURPHY'S SIGN

(pt. on back knees bent: hook fingers under r. costal margin at mid-clavicular line, sevr pain on inspiration = Murphy's Sign)

Yes No

REBOUND TENDERNESS

(do late in exam, slowly depress tender area, when pt. relaxed quickly release, grimace = rebound tenderness.)

Yes No

CORPSMAN'S DIAGNOSIS: Appendicitis Nonspecific Abdominal Pain Renal Colic Perforated Duodenal Ulcer Cholecystitis

Small Bowel Obstruction Other: _____

Medical Officer's DIAGNOSIS: Appendicitis Nonspecific Abdominal Pain Renal Colic Perforated Duodenal Ulcer Cholecystitis

Small Bowel Obstruction Other: _____

MEDEVAC: Yes No

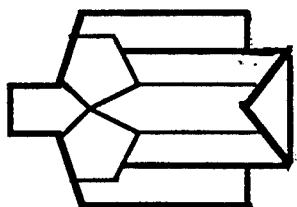
CHEST PAIN DATA SHEET

DATE/TIME:

SSN:

AGE: SEX:

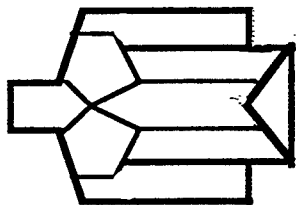
SITE OF PAIN



Central
Chest
L. Side
R. Side
Epigastric
Other

PAIN RADIATION

Yes None
L Arm R Arm
Both Arms
Back
Shoulders
Neck
Jaw
Throat
Fingers/Hands
Epigastric
Other



DURATION OF PAIN

(How long has the pt had the pain?)

_____ Hours

NUMBNESS: Yes
No

ONSET OF PAIN: Sudden
Gradual

TYPE OF PAIN

Tight Gripping Dull
Sharp Burning Stabbing
Hvy/Press/Crush Aching Nagging

TIME COURSE OF PAIN
(at times free of pain = intermittent,
everything else = continuous
Continuous
Intermittent

SEVERITY OF PAIN

(do not ask if obvious distress = severe
everything else = moderate)

Moderate Severe

AGGRAVATING FACTORS

Movement Cough Breathing
Sitting Lying Down/Rest
Leaning Forward Other
None

PROGRESS OF PAIN:

Better
Same
Worse

RELIEVING FACTORS:

Nitro Rest Walking
Morphine Other Drugs
Other None

OTHER SYMPTOMS:

DYSPNEA: Absent This Illness Chronic
ORTHOPEA: (inability to breath except when upright) Yes No

COUGH: Absent This Illness Chronic
PND: (post-nocturnal dyspnea) Yes No

SPUTUM: Yes No
REFLUX Yes No

NAUSEA: Yes No
APPETITE: (recent change) Normal Decreased

VOMITING: Yes No
BOWELS: (recent change) Normal Constipated Diarrhea

PAST HISTORY:

PREVIOUS CHEST PAIN: SMOKER:

Yes
No

PREVIOUS C-R ILLNESS: POSITIVE Hx:

Yes
No

HISTORY MAJOR SURGERY: MI Angina
Yes No
No
Hypertension Diabetes None

PHYSICAL EXAM

VITAL SIGNS TEMPERATURE _____ PULSE RATE _____ RESPIRATION _____		BLOOD PRESSURE SYSTOLIC: _____ DIASTOLIC: _____		EXAMINATION EDEMA: Absent _____ Ankles _____ Other _____ SWEATING: (not due to environ. or exercise) Yes _____ No _____ SHIVERING: (not due to environ. or exercise) Yes _____ No _____ COLD/CLAMMY: Yes _____ No _____ TENDERNESS CALVES: Yes _____ No _____ TENDERNESS CHEST: Yes _____ No _____	RESPIRATORY MOVEMENT: (abnormal = dif. between full inspire & full expire. gt 2 inches, or expansion of sides unequal, otherwise = normal) Normal _____ Abnormal _____ PERCUSSION: (percuss front & back; dull = less resonant than normal, hyper res. = markedly more than normal) Normal _____ Dull _____ Hyper-Resonant _____ CHEST SOUNDS (compare l. & r. sides: rhonchi = cont. musical sounds, rales = discrete, non cont. sounds, decreased = 1 side markedly less) Normal _____ Rhonchi _____ Rales _____ Decreased _____ JUGULAR VENOUS PRESS.: (pt. reclined at 45 deg., chin at 30 deg., to left miniscus more than 1/2 dist to clavical = raised, otherwise = normal) Normal _____ Raised _____ Lowered _____ HEART SOUNDS: (if 1st & 2nd sounds = lub-dub then normal, other = abnormal) Normal _____ Abnormal _____
LAB RESULTS EEG RESULTS: ST Elevation _____ T Depression _____ Q Waves _____ ST Depression _____ Arrhythmia _____ No Apparent Distress _____ SGOT: _____		GENERAL EXAM MOOD: (obvious distress or physical symptoms = distress, concern about illness = anxious) Normal _____ Anxious _____ Distressed _____ In Shock _____ COLOR: (consider temp., check palms & conjunctiva on black or oriental) Normal _____ Flushed _____ Pale _____ Cyanotic _____			

CORPMAN's DIAGNOSIS: MI ANGINA Non-Specific Chest Pain CHEST INFECTION OTHER: _____
 Medical Officer's DIAGNOSIS: MI ANGINA Non-Specific Chest Pain CHEST INFECTION OTHER: _____
 MEDEVAC: Yes No

Appendix B: Text Editor Commands

Cursor Movements	
Right Arrow	Move one character to the right
Left Arrow	Move one character to the left
Up Arrow	Move up on line
Down Arrow	Move down one line
Home	Move to the end of the line
End	Move up one window-full of text
PgUp	Move down one window-full of text
Ctrl + Right Arrow	Move one word right
Ctrl + Left Arrow	Move one word left
Ctrl + Home	Move to the beginning of text
Ctrl + End	Move to the end of text

Select text with key board	
Shift Arrow Keys	Select a range of characters
shift Arrow Keys	Select a range of words
Shift + Ctrl Arrow Keys	Select from cursor to beginning of text
Shift + Ctrl + End	Select from cursor to end of text
Ctrl + A	Select entire document

Select text with Mouse	
Drag	Select a range of characters
Double-click	Select a range of words
Double-click and drag Keys	Select from cursor to beginning of text
Triple-click	Select from cursor to end of text
Triple-click and drag	Select entire document

Delete and Replace	
Place cursor to the right of the character, press Backspace, or place cursor at the character, press Delete	Delete a characters
Place cursor anywhere in word, press Ctrl+Backspace	Delete a words
Select and press Backspace	Delete a selection
Select text to be replaced, type new text (or Paste)	Replace existing text

Cut, Copy and Paste	
Select the text, press Ctrl+X or use Cut in the Edit menu	Cut Text
Select the text, press Ctrl+C or use Copy in the Edit menu	Copy Text
Press Ctrl+V or use Paste in the Edit menu	Delete a selection
Select text, press Ctrl+V or use Paste in the Edit menu	Replace existing text

Appendix C: Diary/Calendar Commands

Diary/Calendar Commands. At the bottom of the Calendar/Diary window are push buttons used to change the calendar. These buttons correspond to first five options on the Diary menu popup.

System	File	Edit	Diagnosis	Window	Diary
					Back Month PgUp
					Ahead Month PgUp
					Back Year Shift+PgUp
					Ahead Year shift+PgDn
					Today T
					Diary Tab
					Calendar shift+Tab
					Delete...

Calendar Panel. The Calendar panel appears with the current month displayed and the current day's date selected. The month and year at the top of the calendar are highlighted when the Calendar panel is active.

To change the selected date, use the arrow keys or click on the desired day. To change the month backward or forward, use the PgUp and PgDn keys or the two month push buttons, ← M and M →, at the bottom of the window. to change the calendar backward and forward by year, use shift+PgUp and Shift+PgDn or the year push buttons, ← Y and Y →, at the bottom of the window.

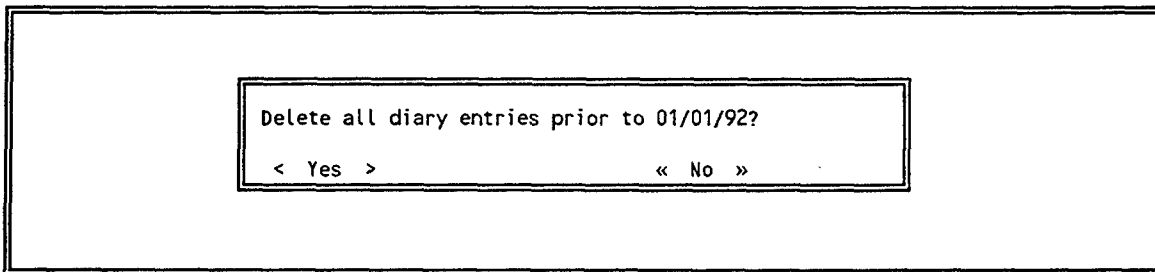
To select today's date by pressing T on the keyboard or by choosing the **TODAY** push button. This is quick way to get back to the current day.

Diary Panel. The *Diary Menu* popup contains options corresponding to those of the Calendar Panel. There can be a diary entry for each day. To make a diary entry select the day in the Calendar panel. Active the Diary panel by pressing Tab or clicking on the panel with the mouse. The cursor flashes in the Diary panel, indicating that it is active.

The diary panel is a text region so the user can use standard text editing techniques. There is no limit to the amount of text that can be enter. All dates that have a diary entry are displayed as enhanced text.

Delete Entries. Each diary entry is stored in the file until deleted by the user. The user refer to these entries by selecting a date. These entries should be cleared from time to time to keep from wasting disk space.

Diary entries are deleted backwards from a selected date. To delete the entry, select a day on the calendar and choose *Delete...* from the *Diary Menu* popup. All text entries prior to but not including that day will be erased. An alert appears to confirm the action. Choose **Yes** to delete the entries. **No** will return the Calendar/Diary option without deleting any entries.



Delete all diary entries prior to 01/01/92?

< Yes > << No >>

Appendix D: Installation Guide

This Appendix contains the listings of the four files used in the installation of the CAMD system; CAMDREAD.DOC, INSTALL.BAT, INSTALL.TXT and CAMD.BAT. The CAMDREAD.DOC contains the instructions for installing the CAMD system. The INSTALL.BAT is the batch file that installs the CAMD system from the three floppy disks to the hard drive. The INSTALL.TXT contains the messages that are displayed during installation. The CAMD.BAT is the batch file that starts the CAMD system once it has been installed.

CAMDREAD.DOC

Computer Assisted Medical Diagnosis Installation.

The CAMD system needs 3 Mega bytes on a hard drive. This installation package includes three 5 1/4" low density floppy disks.

To install the CAMD system, complete the following:

1. Put the CAMD INSTALLATION DISK #1 into disk drive (A or B)
2. Goto floppy disk drive. Type A: or B:
3. Type > INSTALL A: C: (A: the source drive (floppy), C: the destination drive).
This will start the installation batch file (INSTALL.BAT).
4. The installation will display a message requesting the next disk. Put in disk #2 in floppy drive and press ENTER. This process will be continued for disk #3. After disk #3 is done, Put disk #1 back into the source drive.
5. In the root directory (C:\) modify or add the FILES and SHELL commands in the CONFIG.SYS file. The FILES command should be set to 50 or more (FILES=50). The SHELL command should read (SHELL=COMMAND.COM /P /E:512) for DOS 3.2 and higher and (SHELL=COMMAND.COM /P /E:32) for DOS 3.1 and below.
6. Reboot the computer.
7. At the DOS prompt type C:\CAMD> CAMD to start (execute) the CAMD system.
This will start the CAMD.BAT file.
8. The password is CAMD.

INSTALL.BAT

```
echo off
:install.bat hll@nhrc
if "%2"==" " goto L1
cls
type install.txt
pause
cls
md %2\camd
cd %2\camd
copy splice.com %2
%2
splice %1\camdata.exe
camdata.exe -d
splice %1\camdsrce.exe
camdsrce.exe -d
del camdata.exe
del camdsrce.exe
del splice.com
cls
echo Remove Disk from Drive
echo CAMD installation completed!!!
echo
```

```
echo Note: Go to root directory, modify or add the FILES and SHELL
echo commands into CONFIG.SYS file, the FILES command should be set to 50
echo or more (FILES=50). The SHELL command should read
echo (SHELL=COMMAND.COM /P /E:512) for DOS 3.2 and higher and
echo (SHELL=COMMAND.COM /P /E:32) for DOS 3.1 and below.
echo Reboot the system.
echo
```

```
goto end
:L1
echo format:  INSTALL s: d:
echo          s: source drive (a: or b:)
echo          d: destination drive (c: or d:) to install the camd system.
:END
```

INSTALL.TXT

This will install the Computer Assisted Medical Diagnostic System.

This installation will create a subdirectories \CAMD on your destination drive. You will need a minimum of approximately 3 MB of space available for all the necessary files. In the root directory (C:\) modify or add the FILES and SHELL commands to the CONFIG.SYS file. The FILES command should be set to 50 or more (FILES=50). The SHELL command should read (SHELL=COMMAND.COM /P /E:512) for DOS 3.2 and higher and (SHELL=COMMAND.COM /P /E:32) for DOS 3.1 and below.

If the \CAMD subdirectory is not on the same drive as the \SNAP subdirectory, modify the CAMD.BAT to set the appropriate drive and path in the system environment.

If you want to discontinue the installation, hit Ctrl-C.

If you have any questions regarding the installation, call:

D.M. Pearsall (Dee)
Naval Health Research Center
P.O.Box 85122, San Diego, CA 92186-5122
DSN or Commercial 553-8401 Area Code (619)

CAMD.BAT

```
echo off
:This runs the CAMD demo from MS-DOS and
:establishes path and environment variables
:This camd.bat not hard code SAMS environment to specific drive. It assume
:was CAMD system has same drive with SAMS.
IF not "%camd%"==" " goto L05
:this is the data path
set camd=\camd\data
:L05
IF not "%sams%"==" " goto L1
:this is the sams system path
set sams=\snap\sams
:L1
IF not "%camdx%"==" " goto L2
set camdx=\camd\bin
:L2
if not exist %camd%\system.dbf goto usage
if exist %camdx%\camd.exe goto camdex
goto end
:camdex
:run DOS executable
cd %camdx%
camd
goto end
:usage
echo File not found %camd%\system.dbf
echo You must be on disk with %camd% directory
:end
cd..
```

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE October 1992		3. REPORT TYPE AND DATE COVERED Final Sept 91 - Oct 92
4. TITLE AND SUBTITLE Computer Assisted Medical Diagnosis (CAMD) System Version 1.0 User's Guide			5. FUNDING NUMBERS Program Element: 63706N Work Unit Number: M0095.005-6103	
6. AUTHOR(S) Ly, H., Ryman, D. H., Pearsall, D. M.				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Health Research Center P. O. Box 85122 San Diego, CA 92186-5122			8. PERFORMING ORGANIZATION Report No. 92-21	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Naval Medical Research and Development Command National Naval Medical Center Building 1, Tower 2 Bethesda, MD 20889-5044			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) The CAMD system is designed to assist corpsmen in rendering a medical diagnosis. The CAMD system was written in FoxPro Version 2.0, a database management system. The signs, symptoms, and laboratory information collected by the Abdominal and Chest modules can be gathered on the standard forms developed for CAMD, or entered directly (real time) into the system. The Chronological Record of Medical Care Standard Form 600 (SF600) can then be generated and edited to document an encounter. Additional, information from the disease and treatment files can be added to the SF600. The CAMD system User's Guide was written to introduce the Independent Duty Corpsmen to this software system, explaining the Keyboard and Mouse commands necessary to run the various options, and displaying the screens associated with them.				
14. SUBJECT TERMS Expert System Computer Assisted Medical Diagnosis Medical Automated System			15. NUMBER OF PAGES 49	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT Unlimited	